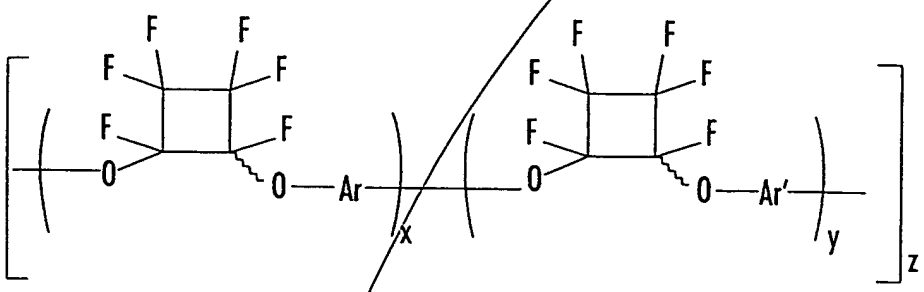
What is claimed is:

SUB A1 1. A method of making an optical device, comprising:

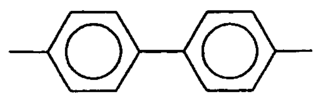
(a) providing a copolymer composition of the structural formula:

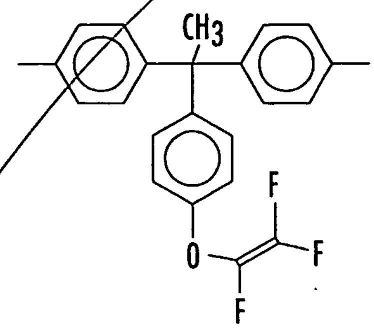


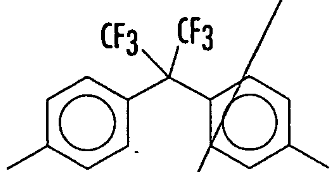
wherein z is greater than or equal to 2, and

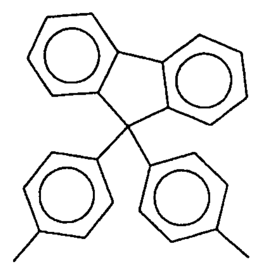
wherein x and y each are greater than or equal to 1, respectively, and

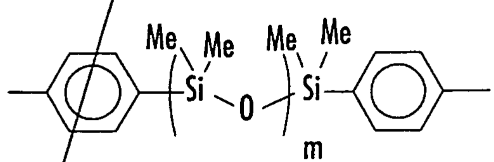
wherein the Ar and the Ar' groups each comprise substituted or nonsubstituted aryls selected from the group comprising:

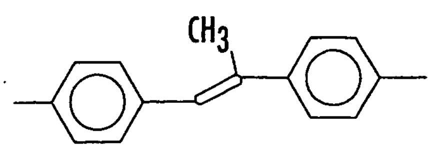


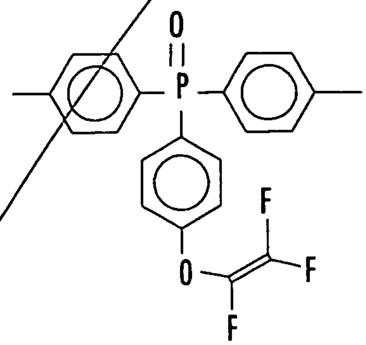

CH3
O
F
F
F

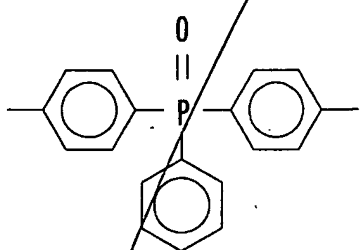

CF3
CF3



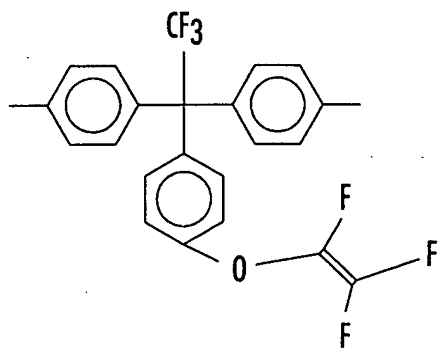

Me
Me
Me
Me
Si
O
Si
m


CH3





and



, and

(b) applying the copolymer composition by coating to form a film.

2. The method of claim 1 in which the copolymer is prepared from a trifluorovinyl aromatic ether.

3. The method of claim 1 in which the copolymer composition is spin coated.

4. The method of claim 1 in which the copolymer composition is coated by dipping.

5. The method of claim 1 in which the copolymer composition is dissolved in a solvent prior to coating the copolymer composition.

6. The method of claim 1 comprising the additional step of:
(c) thermally curing the film to form a cured thermoset film.

7. The method of claim 6 in which the thickness of the thermoset film is at least about 0.6 microns.

8. The method of claim 6 in which the thickness of the thermoset film is at least about 0.8 microns.

9. The method of claim 6 in which the thickness of the thermoset film is at least about 0.9 microns.

10. The method of claim 6 in which the thickness of the thermoset film is at least about 1 micron.

11. The method of claim 6 in which the thickness of the thermoset film is at least about 2 microns.

12. The method of claim 6 in which the thickness of the thermoset film is at least about 3 microns.

13. The method of claim 6 in which the thickness of the thermoset film is at least about 4 microns.

14. The method of claim 6 in which the thickness of the thermoset film is at least about 5 microns.

15. The method of claim 6 in which the thickness of the thermoset film is at least about 10 microns.

16. A method of making an optical device, comprising:
(a) providing a perfluorocyclobutyl-based copolymer composition,
(b) coating the perfluorocyclobutyl-based copolymer composition upon a substrate to form a first film, and
(c) thermally curing the first film to form a thermoset film.

17. The method of claim 16 in which the thermoset film comprises a substantially transparent polymeric core.

18. The method of claim 17 comprising the additional step of:
(d) applying cladding to the outer surface of the core to form an optical waveguide.

19. The method of claim 16 in which the coating step is accomplished by spin coating.

20. The method of claim 16 in which the perfluorocyclobutyl-based copolymer composition is applied to the substrate in a solution having at least about 25% solids by weight.

21. The method of claim 16 in which the perfluorocyclobutyl-based copolymer composition is applied to the substrate in a solution having at least about 40% solids by weight.

22. The method of claim 16 in which the perfluorocyclobutyl-based copolymer composition is applied to the substrate in a solution having at least about 60% solids by weight.

23. The method of claim 16 in which the perfluorocyclobutyl-based copolymer composition is applied to the substrate in a solution having at least about 70% solids by weight.

24. The method of claim 16 in which the cured film comprises a thickness of at least about 1 micron.

25. The method of claim 16 in which the cured film comprises a thickness of at least about 2 microns.

26. The method of claim 16 in which the cured film comprises a thickness of at least about 3 microns.

27. The method of claim 16 the film is formed from a coating comprised from a mixture of perfluorocyclobutyl based homopolymers.

28. A method of making an optical device, comprising:
(a) providing a perfluorocyclobutyl-based copolymer composition,
(b) spin coating the perfluorocyclobutyl-based copolymer composition upon a substrate to form a first film, and
(c) thermally curing the first film to form a cured film having a thickness of at least about 2 micron.

29. An optical device constructed by the method of:
(a) providing a perfluorocyclobutyl-based copolymer composition having a solids content of at least about 50%,
(b) spin coating the perfluorocyclobutyl-based copolymer composition upon a substrate to form a first film, and
(c) thermally curing the first film to form an optical device, thereby forming an optical device having a cured film thickness of at least about 0.6 microns.

30. A solution for making an optical device in which the solution comprises a perfluorocyclobutyl-based copolymer.

31. The solution of claim 30 in which the solution is composed of a mixture of perfluorocyclobutyl-based homopolymers.

32. The solution of claim 30 in which the solution comprises a mixture of at least two different perfluorocyclobutyl-based copolymers.